

$$X(n) = \{1, 1, 1, 1\}$$

$$h(n) = \{2, 2\}$$

Find

$$y(n) = x(n) * h(n)$$

using inverse z.T.

$$X(n) = \delta(n) + \delta(n-1) + \delta(n-2) + \delta(n-3)$$

$$h(n) = 2\delta(n) + 2\delta(n-1)$$

$$y(n) = x(n) * h(n)$$

$$y(z) = X(z) h(z)$$

$$= [1 + z^{-1} + z^{-2} + z^{-3}] [2 + 2z^{-1}]$$

$$= 2 + 2z^{-1} + 2z^{-2} + 2z^{-3} + 2z^{-1} + 2z^{-2} + 2z^{-3} + 2z^{-4}$$

$$= 2 + 4z^{-1} + 4z^{-2} + 4z^{-3} + 2z^{-4}$$

$$y(n) = 2\delta(n) + 4\delta(n-1) + 4\delta(n-2) + 4\delta(n-3) + 2\delta(n-4)$$

$$y(n) = \{2, 4, 4, 4, 2\}$$